219/744
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SALES OFFICES

UNITED STATES	TELEPHONE
Huntsville, ALABAMA Toll-free to Silver Spring, Md.	(Dial "O") WX-9400
Gardena, CALIFORNIA 90248 Emerson & Cuming, Inc.	(213) 321-6650 TWX (910) 346-6736
San Francisco, CALIFORNIA Toll-free to Gardena, Ca.	(Dial "O") Enterprise 1-4719
Cocoa Beach, FLORIDA 32931 DBM Research Corp.	(305) 783-2438
Northbrook, ILLINOIS 60062 Emerson & Cuming, Inc.	(312) 272-6700 TWX (910) 686-0006
Silver Spring, MARYLAND 20902 Emerson & Cuming, Inc.	(301) 949-2777 TWX (710) 828-9692
Canton, MASSACHUSETTS 02021 Emerson & Cuming, Inc.	(617) 828-3300 TWX (710) 348-1324
Minneapolis, MINNESOTA Toll-Free to Northbrook, Il.	(Dial "0") Zenith 2576
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Kings Park, NEW YORK 11754 Emerson & Cuming, Inc.	(215) 848-2040 TWX (710) 670-9850
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CANADA	
Burlington, ONTARIO Arbell Equipment Limited	(416) 632-9494
Ottawa 5, ONTARIO Arbell Equipment Limited	(613) 225-1294
Montreal (Pierrefonds), QUEBEC Arbell Equipment Limited	(514) 683-2925
EUROPE	
Oevel, BELGIUM Emerson & Cuming Europe N.V.	014-59-326 TWX (846) 31-500
Copenhagen, DENMARK Harold Skov, Sotoften 31	GE-6868
London W3, ENGLAND Emerson & Cuming (U.K.) Ltd.	01-992-6692
Paris 20e, FRANCE Emerson & Cuming France S.A.	366-59-86 TWX (842) 25-303
Stuttgart, GERMANY Emerson & Cuming, GmbH	(0711) 712 526
Milan, ITALY Emerson & Cuming Italiana S.p.A.	27.39.37
Madrid (13), SPAIN Unitronics, Torre de Madrid	241.14.96
Lidingo, SWEDEN Aktiebolaget Galco	767 03 801
Leimatt 1, SWITZERLAND Triskelion ag	(042) 21 62 80
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Reservoir, Victoria, 3073 Andrew Antennas	(03) 460-1544 Telex 30840
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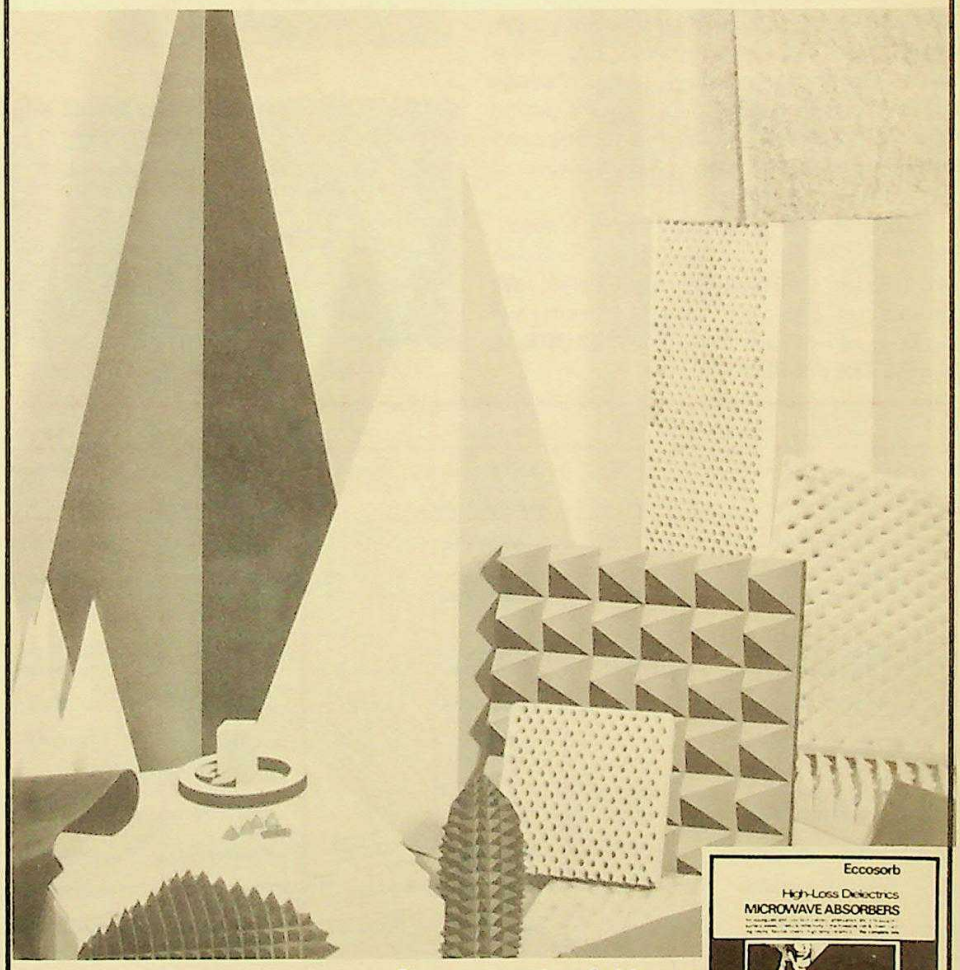
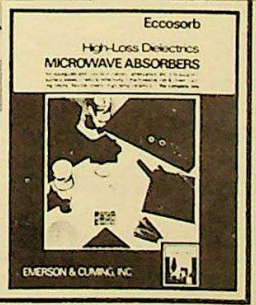
Yokohama-Shi, Kanagawa-Ken 231 Emerson & Cuming Japan K.K.	045-681-6677 Telex J47807

Eccosorb®
"Free-Space"
MICROWAVE ABSORBERS

• modular "building blocks" for anechoic chambers • conformable, flexible foams to reduce radar cross section • non-burning, weatherproof, high-temperature types — the complete line



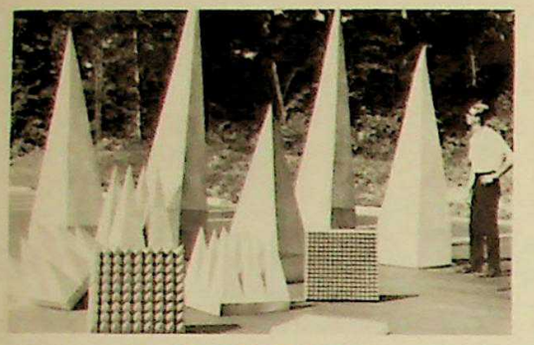


See companion folder on Eccosorb High-Loss Dielectrics for transmission lines.

EMERSON & CUMING, INC.

CANTON, MASSACHUSETTS
GARDENA, CALIFORNIA / NORTHBROOK, ILLINOIS
EMERSON & CUMING Europe N.V., Oevel, Belgium

(219-744)



Eccosorb VHP

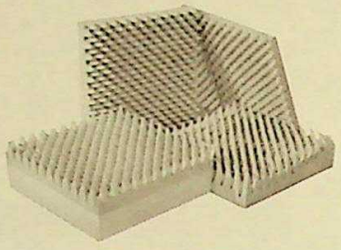
ECCOSORB VHP – Best-performing solid pyramidal absorber. Wide range of sizes up to 150" for large, state-of-the-art anechoic chambers. Previously sold by B.F. Goodrich. **TECHNICAL BULLETIN 8-2-3.**

ECCOSORB SPY – High-performance lightweight, open-cell foam pyramid. Each cell is weatherproof-coated. Rain passes through and surfaces dry quickly. Open cells permit air circulation for high power handling capability. **TECHNICAL BULLETIN 8-2-15A.**

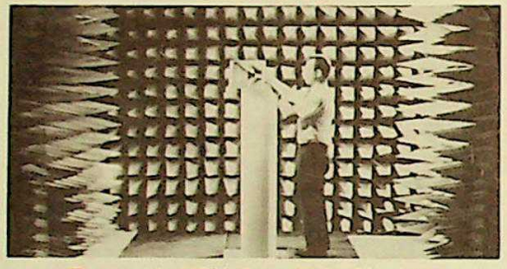
ECCOSORB WG – Wedge-shaped companion to VHP, also developed by B.F. Goodrich. Used in chambers with VHP, WP permits impressive cost savings. Flooring and outdoor versions are available. **TECHNICAL BULLETIN 8-2-3B.**

ECCOSORB HPY – Hollow pyramidal absorber comparable to VHP but lighter in weight and lower in cost. Used in numerous state-of-the-art anechoic chambers. HPY-W is outdoor version. **TECHNICAL BULLETIN 8-2-2.**

ECCOSORB CV – Premium absorber to 100 GHz. Electrically and physically tapered foam with outstanding millimeter-wave performance. Flexible, can be cut and contoured. **TECHNICAL BULLETIN 8-2-14.**



Eccosorb CV



Eccosorb HPY Anechoic Chamber

ECCOSORB OCF – Open-cell foam, weatherproof version of CV. Comparable to Eccosorb SPY but with convoluted instead of pyramidal front face. **TECHNICAL BULLETIN 8-2-15.**

ECCOSORB H – Flat rubberized-fiber material was the earliest microwave absorber. Now self-extinguishing per ASTM D1692-68. Easy to use and very low cost. **TECHNICAL BULLETIN 8-2-1.**

Eccosorb H

ECCOSORB FR – Moderate performance, flat, white-surfaced foam blocks can be stacked or bonded permanently. Cost is low. **TECHNICAL BULLETIN 8-2-5.**

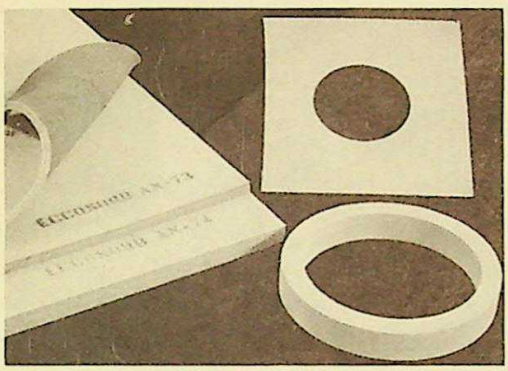
ECCOSORB CV-CB – Premium-quality electrically-tapered absorber. Flat surface and rigid construction make it ideal for floors and walkways in anechoic chambers. **TECHNICAL BULLETIN 8-2-14B.**

ECCOSORB ABSORBER	VHP	SPY	WG	HPY & HPY-W	CV & CV-W	OCF
CLAIM TO FAME	Best Performance for Anechoic Chambers	Best Weatherproof Use	Low Cost for Non-critical Use	Lightweight High Performance for Chambers	Electrically Tapered, Best for 20GHz & Up	Weatherproof High Frequency
FREQUENCY RANGE	50 MHz & Up	500 MHz & Up	300 MHz & Up	50 MHz & Up	1 GHz & Up	1 GHz & Up
BASIC COMPOSITION	Loaded Urethane Foam	Loaded Open-Cell Urethane Foam	Loaded Urethane Foam	Loaded Urethane Foam	Loaded Urethane Foam	Loaded Open-Cell Urethane Foam
BASIC GEOMETRY	Solid Pyramids on Flat Base	Solid Pyramids on Flat Base	Solid Wedges on Flat Base	Hollow Pyramids on Flat Foam Base	Foam Blocks Convoluted Front	Foam Blocks Convoluted Front
COST/SQ FT	$4.50-$50.00	$12.00-$17.50	$25	$4.50-$20.00	$4.50-$11.25	$7.50-$12.50
SERVICE TEMP.	To 250°F	To 250°F	To 250°F	To 250°F	To 250°F	To 250°F
COLOR OF SURFACE	Light Blue	Light Blue	Light Blue	White, Black or Colors	White, Black or Colors	White, Black or Colors
POWER HANDLING	2.0 watts/sq in	10 watts/sq in	2 watts/sq in	2 watts/sq in	1.5 watts/sq in	10 watts/sq in
FIRE RETARDANCY	Self Extinguishing	Self Extinguishing	Self Extinguishing	Self Extinguishing	Self Extinguishing	Self Extinguishing
OUTDOOR USAGE	Use SPY	Excellent	Must be treated	Use HPY-W	Use CV-W	Excellent
FUEL OIL RESISTANCE	Must be specially treated	Poor	Must be protected	Use HPY-W	Use CV-W	Poor
INSTALLATION	Mechanically mount large pieces ECCOBOND 87H(NF) small pieces	Mech. Mount or ECCOBOND 87H(NF)	ECCOBOND 87H(NF)	Mech. Mount Large Pcs ECCOBOND 87H(NF) Small Pcs	Stack or Adhere ECCOBOND 87H(NF)	Stack or Adhere ECCOBOND 87H(NF)
BASE DIMENSION	24" x 24"	24" x 24"	24" x 24"	24" x 24"	24" x 24"	24" x 24"
TYPE	2 4 8 12 18 26 45 70 110 150	9 12 18 24	2 4 8 12 18 26	12 18 24 30 54 72	4 6 9	4 6 9
HEIGHT OR THICKNESS, In.	2 4 8 12 18 26 45 70 110 150	9 12 18 24	2 4 8 12 18 26	12 18 24 30 54 72	4 6 9	4 6 9
WEIGHT, lb/sq ft	0.5 0.5 1.0 1.2 1.5 2.0 3.5 6.0 8.0 11.0	5.5 4.8 5.8 6.2	1.5 2.6 4.5 6.0 8.5 10	1.0 1.2 1.3 2.5 3.2 3.7	0.8 0.9 1.8	1.1 1.2 2.5
LOWEST FREQUENCY IN GHz FOR MAXIMUM REFLECTIVITY OF -17db	– – – – – – – – – –	– – – –	Consult Emerson & Cuming, Inc. Canton, Massachusetts for Recommendations	– – – – – –	– – –	– – –
-20db	– – – – – – – – – –	1 0.5 0.4 0.3		0.5 0.4 0.3 0.2 0.12 0.08	2.5 1.5 1	2.5 1.5 1
-30db	5.0 3.0 1.0 0.8 0.5 0.3 0.2 0.1 0.1 0.06	1.5 1 0.5 0.5		1 0.8 0.6 0.4 0.3 0.2	5 3 1.5	5 3 1.5
-40db	10.0 5.0 3.0 3.0 1.0 1.0 0.5 0.3 0.2 0.12	3 3 1 1		2 1.5 1.2 0.8 0.6 0.5	8 6 3	8 6 3
-50db	20.0 15.0 10.0 5.0 5.0 3.0 3.0 1.0 0.5 0.30	9 9 9 9		10 7 6 5 4 3	25 25 25	25 25 25
TECHNICAL BULLETIN	8-2-3	8-2-15A	8-2-3B	8-2-2	8-2-14	8-2-15

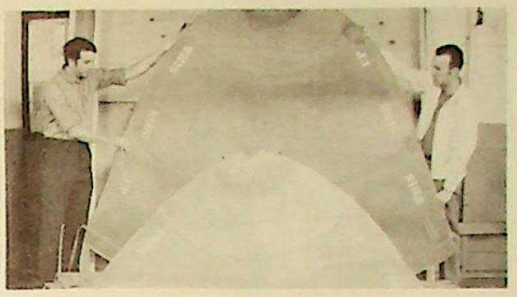
ECCOSORB AN – Thin, light, smooth, flexible, electrically-graded sheets, custom shapes or blankets. Easily cut, shaped to contours and bonded. AN-W is sealed in neoprene-coated fabric. **TECHNICAL BULLETINS 8-2-4 & 8-2-4A.**

ECCOSORB AN-P – Very lightweight, thin, flexible. Weatherproof version of AN. Closed-cell foam can be cut and not edge-sealed. **TECHNICAL BULLETIN 8-2-4B.**

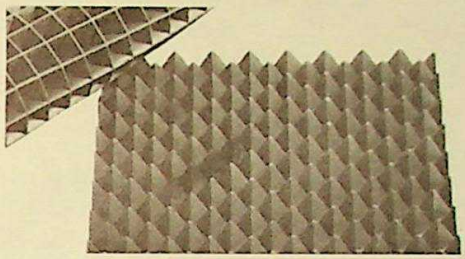
ECCOSORB RM – Flexible silicone foam matches electrical performance of Eccosorb AN to 400°F. Easily cut and contoured. Open cell structure drains quickly and permits forced-air cooling. **TECHNICAL BULLETIN 8-2-9.**



Eccosorb AN



Eccosorb AN-W Blankets



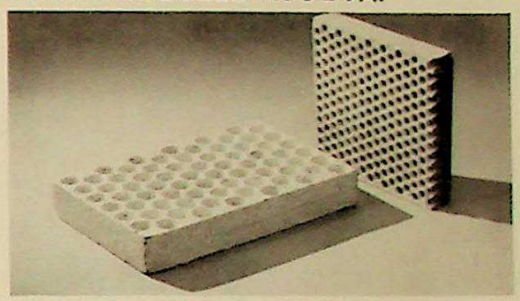
Eccosorb RMP

ECCOSORB RMP – Similar electrical and temperature performance to RM. Impervious to weather and fuel. Preferred for airborne and outdoor applications. **TECHNICAL BULLETIN 8-2-9A.**

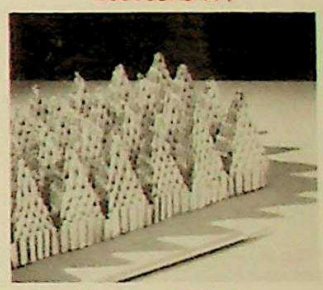
ECCOSORB FBC – Lightest weight surface-resistive fabric formed in pyramid array. Drapable, sewable, suitable for outdoor use. **TECHNICAL BULLETIN 8-2-24.**

ECCOSORB HT – Non-combustible, inorganic ceramic foam for high-power applications. Withstands 650°F. Perforated for forced air cooling. **TECHNICAL BULLETIN 8-2-7.**

ECCOSORB PHD – Lightweight, 500°F, high-performance absorber. Honeycomb structure is easily air-cooled. OK outdoors. **TECHNICAL BULLETIN 8-2-7A.**



Eccosorb HT



Eccosorb PHD

H	FR	CV-CB	AN & AN-W	AN-P	RM	RMP-S & RMP-V	FBC	HT	PHD
Original Free Space Absorber Low Cost	Old Standby Where Flat, White Surface is Needed	Rigid Walkway and Flooring Absorber	Thin, Flexible Easily Cut Wrap Around	Flexible Weatherproof Fuelproof	Flexible High Temp	Conformable for Outdoors & High Temp	Lightweight Structural Core Material	Lightweight Use to 650°F High Power	Premium Reflectivity Highest Power
300 MHz & Up	455 MHz & Up	300 MHz & Up	455 MHz & Up	2.4 GHz & Up	2.4 GHz & Up	2.4 GHz & Up	3 GHz & Up	940 MHz & Up	3 GHz & Up
Curled Rubberized Fibers	Rigid Poly-Styrene Foam	Rigid Poly-Styrene Foam	Loaded Urethane Foam	Closed Cell Poly-Ethylene Foam	Open-Cell Sil Rubber Foam	Sil Rubber (-S) Vinyl (-V)	Coated Fabric	Closed-Cell Ceramic Foam	Fiberglass Honeycomb
Flat Sheets	Smooth Faced Blocks	Smooth Faced Blocks	Flat Sheets	Flat Sheet	Flat Sheet	Array of Pyramids	Array of Pyramids	Flat-Faced Block	Array of Pyramids
$1.50-$7.50	$2.50-$4.25	$11.25-$21.25	$3.50-$16.00	$5.00-$6.75	$60.00	$29.00-$39.00	$14.00	$20.80-$21.70	$50-$100
To 200°F	To 170°F	170°F	To 300°F	To 200°F	To 400°F	To 400°F (-S) To 300°F (-V)	To 200°F	To 650°F	To 500°F
Light	White	White	White	White, Black or Colors	White	Black	Yellow	Silver	Black
1.5 watts/sq in	1 watt/sq in	1 watt/sq in	1.5 watts/sq in	1 watt/sq in	3 watts/sq in	5 watts/sq in	2 watts/sq in	25 watts/sq in	200 watts/sq in
Self Extinguishing	Self Extinguishing	Self Extinguishing	Self Extinguishing	–	Self Extinguishing	Self Extinguishing	Self Extinguishing	Non-Burning	–
Must be covered	OK	Must be treated	Use AN-W	Excellent	OK	Outstanding	OK	OK	Excellent
OK	No	Poor	Use AN-W	Excellent	OK	Outstanding	OK	OK	Excellent
Hooks or ECCOBOND 45	Stacking, Anchors or ECCOBOND 45	Lay Loose	Drape, Tie or Adhere with ECCOBOND 87H(NF)	Mechanically Mount or ECCOBOND 90H	ECCOSIL 1776	ECCOSIL 1776	Drape or ECCOSIL 1776	Stack, Mortar or ECCOSIL 1776	Mech. Mount or ECCOSIL 1776
24" x 24"	12" x 48"	24" x 24"	24" x 24" or large blankets	24" x 24" or large blankets	24" x 24"	12" x 12"	12" wide rolls	12" x 18"	24" x 24"
1 2 4 8 12	330 340	9 12 18 24	72 73 74 75 77 79	74 75	75	75	75	98 99	3
1 2 4 8 12	2 4	9 12 18 24	1/4 3/8 3/4 1-1/8 2¼ 4½	3/8 3/4 1-1/8	1	1	1	2 3	3-1/2
0.33 0.45 1.1 1.7 2.3	0.7 1.25	1.4 2 3 3.9	0.1 0.2 0.3 0.5 0.9 3.0	0.15 0.3 0.5	1	1	1	<0.15 0.7	2
– – – – –	– –	– – – –	– – – – – –	7.5 3.5 2.4	–	3	3.0	2.7 0.94	0.4
5 2.5 1 0.5 0.3	2.3 0.94	– 0.5 0.4 0.3	20 7.5 3.5 2.4 1.2 0.6	– – –	2.4	–	–	– –	–
– – – – –	– –	3 2.5 1.5 1	– – – – – –	– – –	–	–	–	– –	–
– – – – –	– –	10 10 7 4	– – – – – –	– – –	–	–	–	– –	–
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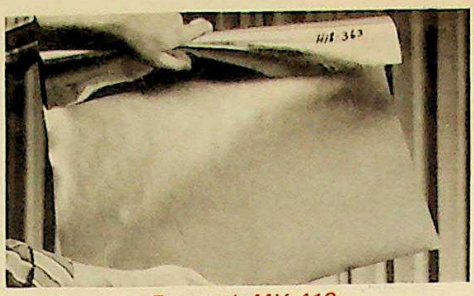
8-2-1	8-2-5	8-2-14B	8-2-4 & 8-2-4A	8-2-4B	8-2-9	8-2-9A	8-2-24	8-2-7	8-2-7A

ECCOSORB SF – Thin, flexible resonant absorber for 2-24 GHz. SF and SF-T are silicone rubber based, withstand 325°F, SF-U is based on Urethane rubber, has high abrasion resistance. **TECHNICAL BULLETIN 8-2-18.**

ECCOSORB MX-410 – Thinnest, lightest resonant microwave absorber. Tuned to center of X-Band at 9.375 GHz per MIL-M-710 and MIL-M-712. Integral metal foil backing. **TECHNICAL BULLETIN 8-2-20.**

Eccosorb SF



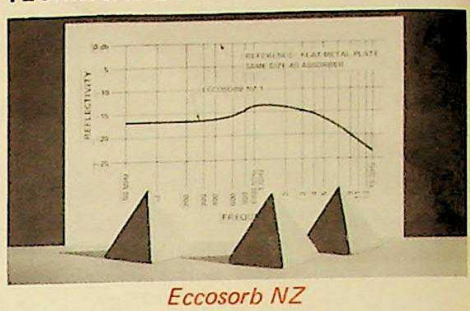
Eccosorb MX-410

ECCOSORB RF – Lightweight, flexible resonant absorber based on Salisbury Screen principle. Foam sheet spaced an electrical quarter-wave from a conducting surface. For S,C, X and Ku Band. **TECHNICAL BULLETIN 8-2-19.**

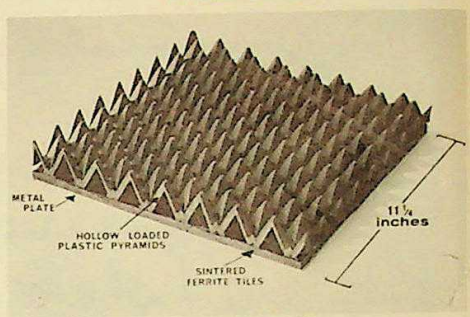
ECCOSORB NZ – Lowest frequency broadband absorber – 25 MHz to 12 GHz. Thin ferrite tiles cement to flat or curved surfaces. No out-gassing in vacuum. **TECHNICAL BULLETIN 8-2-17.**

ECCOSORB FGM – Tough silicone rubber is very thin yet broadbanded. Withstands high temperature; good ablator; good for airborne applications. **TECHNICAL BULLETIN 8-2-23.**

ECCOSORB UPF – New, thin, very broadband. Combines the low frequency (<100 MHz) performance of sintered ferrites with the microwave (>12 GHz) capabilities of lossy pyramidal shapes. Only 1¼" thick. Good for small chambers. Good outdoor. **TECHNICAL BULLETIN 8-2-17A.**



Eccosorb NZ



Eccosorb UPF

ECCOSORB ABSORBER	SF	MX410	RF	NZ	FGM	UPF
CLAIM TO FAME	Resonant Very Thin Flexible	Resonant Thinnest Flexible	Resonant Thin Flexible	Broadband Low Frequency + High Temperature	Thin, Very Broadband 2-12 GHz Flexible Too	Best Broadband Weatherproof
FREQUENCY RANGE	1-16 GHz	X-Band	3-16 GHz	50 MHz & Up	2-12 GHz	100 MHz-12 GHz
BASIC COMPOSITION	Loaded Silicone or Urethane	Resistive Front Metal Foil Back	Reinforced Urethane Plastic & Foam	Fired Ferrite	Ferrites, etc. in Silicone Rubber	Sintered Ferrite & Urethane
BASIC GEOMETRY	Flat Sheets	Flat Sheets	Flat Sheets	NZ-1 = Pyramid NZ-2, NZ 31-, NZ-41 and NZ-51 = Flat Tile	Thin Flat Sheets	Hollow Pyramids on Flat Base
COST/SQ. FT.	$24.00-$49.00	$48.00	$10.00	$60.00-$100.00	$24.00-$49.00	$125.00
SERVICE TEMP.	To 350°F SF To 250°F SF-U		To 300°F	To 500°F	To 500°F	To 250°F
COLOR OF SURFACE	Gray	Black	Green	Black	Brown	Gray-Black
POWER HANDLING	10 watts/sq in	3 watts/sq in	1 watt/sq in	20 watts/sq in	10 watts/sq in	3 watts/sq in
FIRE RETARDANCY	Non-Burning	–	–	Non-Burning	Non-Burning	Non-Burning
OUTDOOR USAGE	OK	OK	Seal Edges	OK	OK	Excellent
FUEL OIL RESISTANCE	OK	OK	Seal Edges	OK	OK	Good
INSTALLATION	ECCOSIL TP50	ECCOBOND 87H(NF)	ECCOBOND 87H(NF)	Mechanically mount, or adhere with ECCOSIL 1776	ECCOSIL TP50	Mech. Mount or ECCOSIL 1776
BASE DIMENSION	12" x 12"	22" x 22"	24" x 24"	1" x 1" / 2.25" x 2.25"	12" x 36"	11.25" x 11.25"
TYPE	24 types	410	S C X Ku	1 / 2 31 41 51	40 125	UPF
HEIGHT OR THICKNESS, in.	0.035 to 0.22	0.025	0.75 0.32 0.17 0.11	1 / 0.25 0.29 0.275 0.20	0.040 0.125	1.25
WEIGHT, lb/sq ft	0.6 to 6	0.156	1.5 0.6 0.3 0.2	8.5 / 4.5 7.7 6.4 5.1	1.0 2.5	10
LOWEST FREQUENCY IN GHz FOR MAXIMUM REFLECTIVITY OF -17db -20db -30db -40db -50db	-20db or better at resonant freq.	-20db or better at 9.375 GHz	-25db or better at 3 GHz 5.5 GHz 9.375 GHz 16 GHz	-15db Ave from 50MHz to 12 GHz / -15db at 0.2 GHz -10db at 1GHz -5db at 5 GHz / -30db -35db -35db Resonance at 0.25 0.4 0.8 GHz	-10db Ave from 4 GHz to 10 GHz -12db Ave from 2 GHz to 12 GHz	-15db Ave from 100 MHz to 12 GHz
TECHNICAL BULLETIN	8-2-18	8-2-20	8-2-19	8-2-17	8-2-23	8-2-17A

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